

# Missouri's 2022 Timber Products Output Report



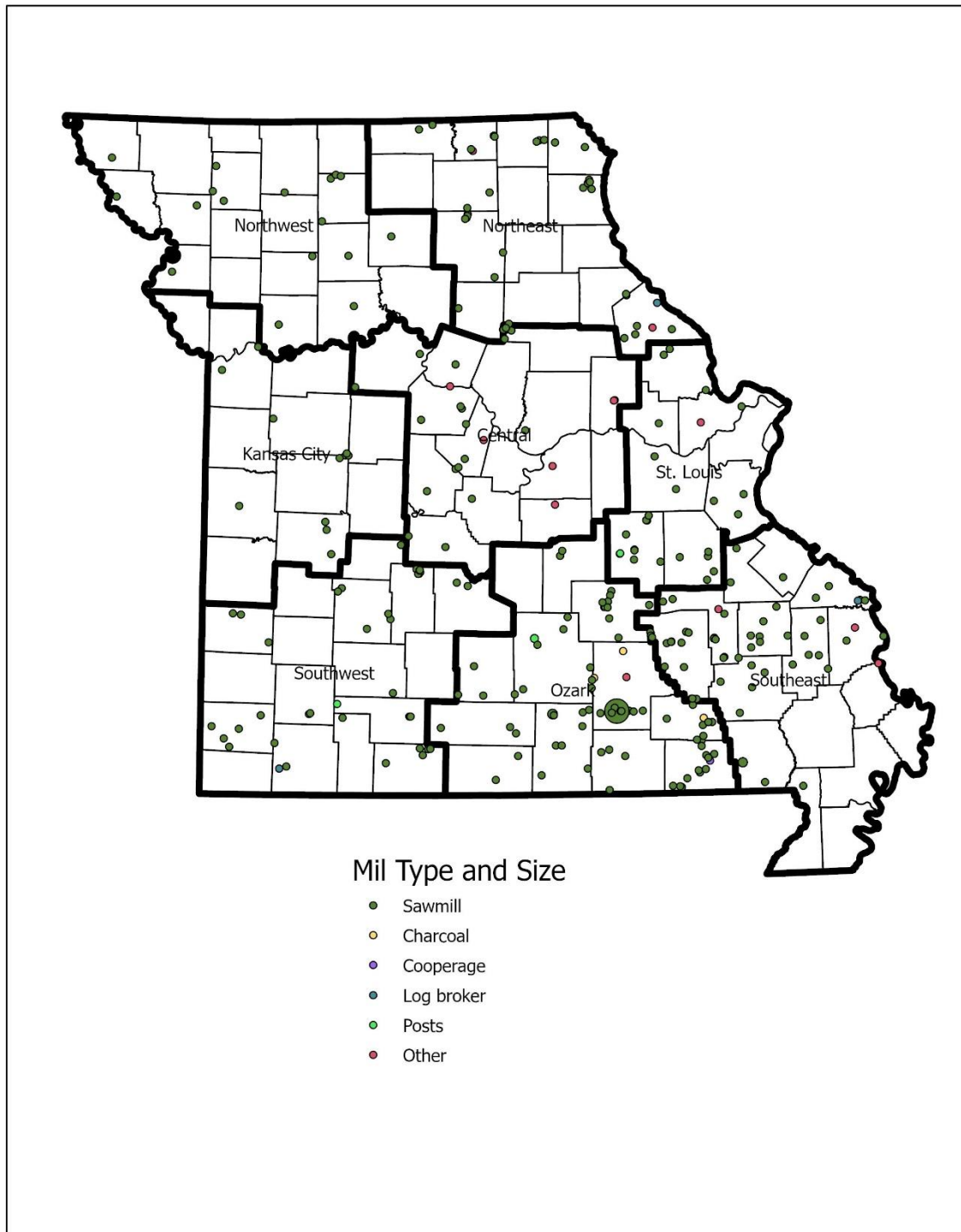


Figure 1 - Locations of active primary wood-using mills with mill type (size of dot indicates mill volume), Missouri, 2022

# 2022 MDC Timber Product Output (TPO) Report

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*Tom Treiman and Mike Morris, Missouri Department of Conservation, Oct. 2023*

In the late winter and spring of 2023, Missouri Department of Conservation foresters set out to conduct interviews with 137 mill owner/operators, a random sample of primary wood processors throughout the state, asking for information on their firms from 2022. In this report we present forest industry trends, harvest levels and other details. Such detailed information is necessary for intelligent planning and decision making in wood procurement, forest resources management, and forest industry development. Likewise, researchers need current forest industry and industrial roundwood information for planning projects.

Following USFS guidelines, the survey sample consisted of 137 mills, out of approximately 320 mills that were or had been operating in Missouri as listed in MDC's online database of primary mills (<https://mdc12.mdc.mo.gov/applications/momills/momillssearch.aspx>). The 95 responses represent about a 69% response rate. (Response Table 1.)

Because of this low response rate, analyses in this report are based on a combination of this new data and reprocessed data from earlier surveys, which may not match earlier published data. Totals are calculated based on the samples mills current data, and on data from previous years for mills that were not sampled. (Response Table 2.) Given the age of some of the data, all results should be used with caution.

InterviewType	Surveys	Rate
In-person	95	69.3%
Missing	6	4.4%
Refused	9	6.6%
Unavailable	27	19.7%

Response Table 1 - Response rates for the 2022 TPO survey

Data Year	Surveys	Percent
2023	82	28.1%
2022	102	34.9%
2021	66	22.6%
2020	9	3.1%
2019	16	5.5%
2018	6	2.1%
2016	7	2.4%
2014	2	0.7%
2011	2	0.7%

Response Table 2 – Table of the year of the most recent data (on products, mill types, species, and source counties) for each mill

Data from surrounding states (imports from Missouri) is unavailable at the time of writing. As other states report, figures in this report may become out-of-date.

All board foot data in this report have been converted to International 1/4-inch scale by applying a multiplier of 1.08 to all roundwood volumes reported in Scribner Decimal C scale by sawmills and handle mills, a multiplier of 1.04 to all roundwood volumes reported in Scribner Decimal C scale by veneer and cooperage mills, a multiplier of 1.38 to all roundwood volume reported in Doyle scale by sawmills and handle mills, and a multiplier of 1.14 to all roundwood volume reported in Doyle scale by veneer and cooperage mills.

- In 2022, Missouri's primary wood using industry was comprised of 275 sawmills, 2 cooperage mills, 4 post and pole mills, 5 charcoal plants, 5 log brokers, and 14 mills producing other products (Table 1).

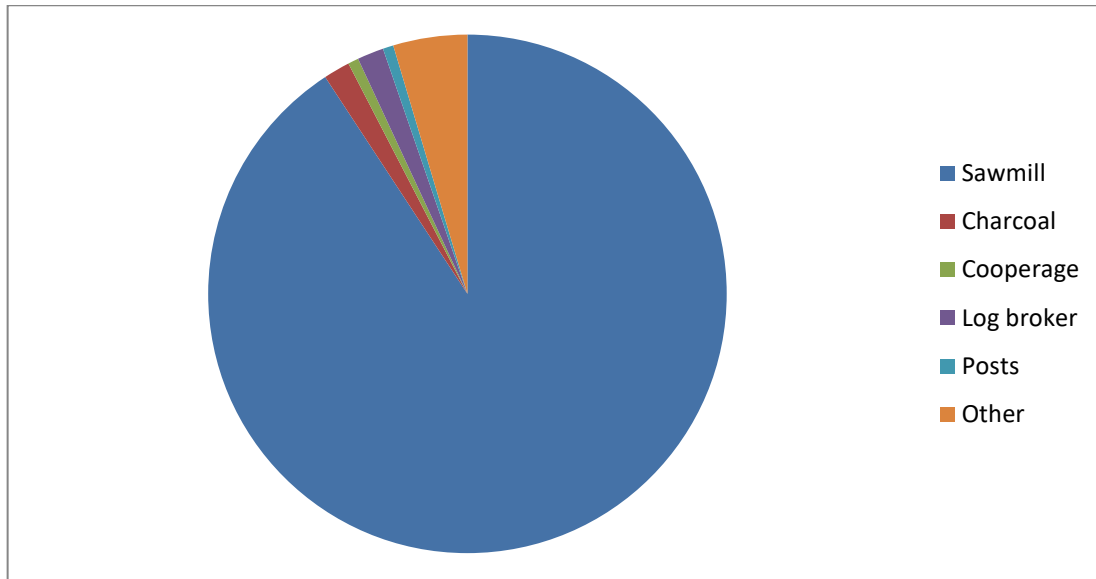


Figure 2 - Mills by type, 2022.

- Circular sawmills accounted for 52% of total volume and band sawmills for about 30%. (Table 8)

- Since the 1990s, the number of mills in Missouri has changed little, compared to major declines earlier in the 20<sup>th</sup> century.

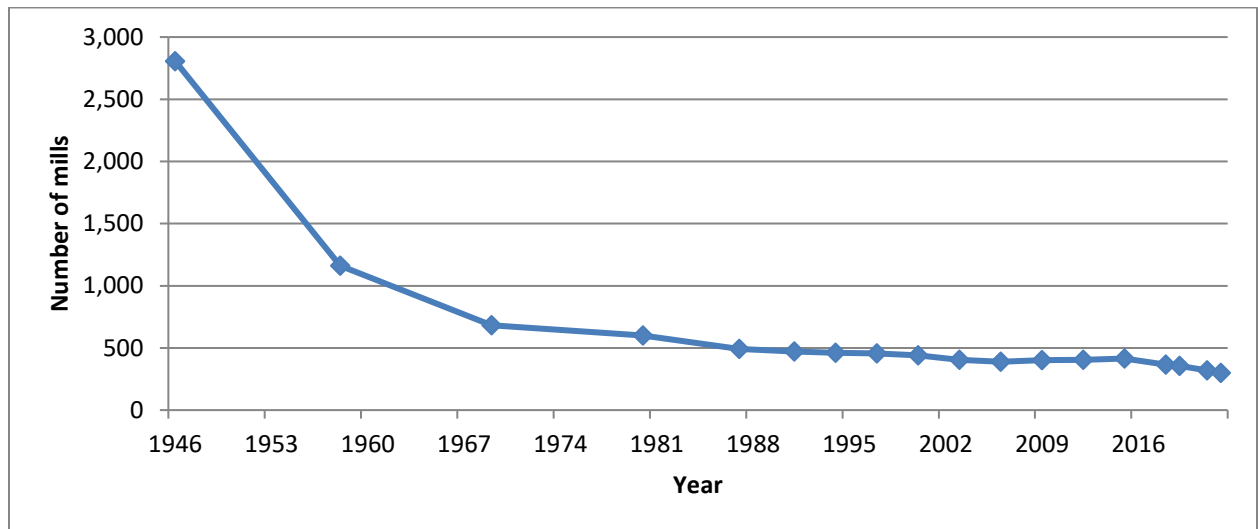


Figure 3 - Number of Missouri mills over time.

- In 2022 the total number of sawmills in Missouri was 275 compared with 342 mills in 2018.

- There were 26 large mills (with an annual lumber production of 5 million board feet or more).

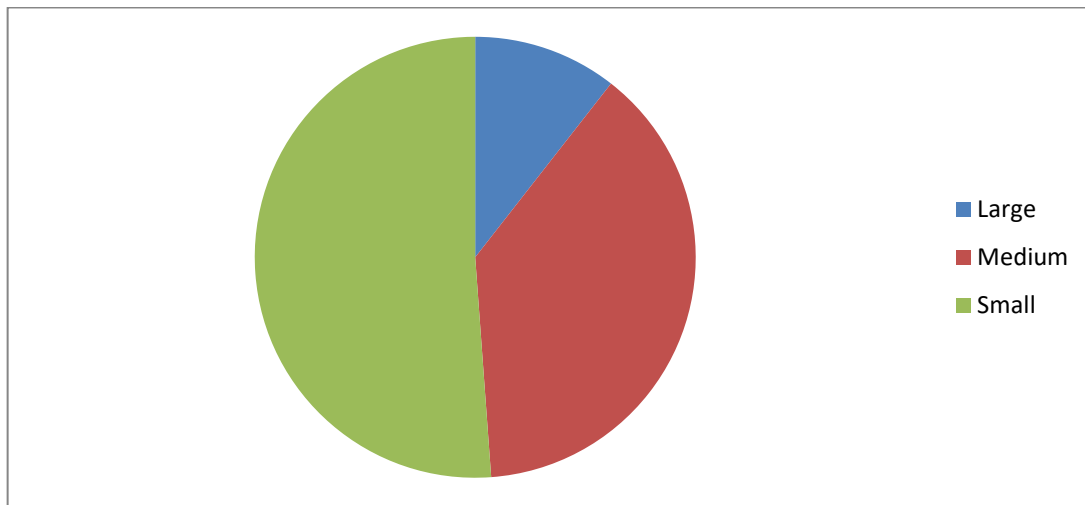


Figure 4 - Mills by size, 2022.

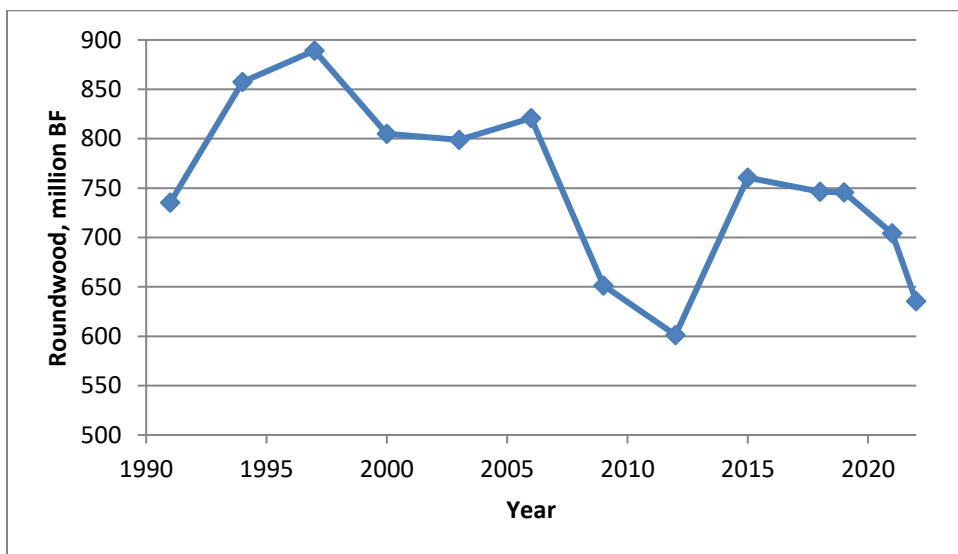


Figure 5 - Mill receipts over time.

- In 2022, the primary wood-using mills in Missouri processed about 635,000 MBF of industrial roundwood. (Table 2)
- About 54,000 MBF harvested from other states was reported by Missouri mills. (Table 4)
- Based on 2009 data (the latest available), other states, primarily Kentucky and Iowa, imported about 44,600 MBF of roundwood from Missouri (including from Missouri log brokers.)
- About 7% of the industrial roundwood processed by Missouri mills consisted of softwood species (Table 2).
- About 89% consisted of sawlogs and bolts. (Table 8)
- In 2022, the MDC’s Ozark Region was the leading supplier of industrial roundwood in Missouri, with about 35% of the total industrial roundwood produced. The Southeast Region was second with 24%. (Table 2)
- The top counties for industrial roundwood supply included Shannon, Dent, and Carter.

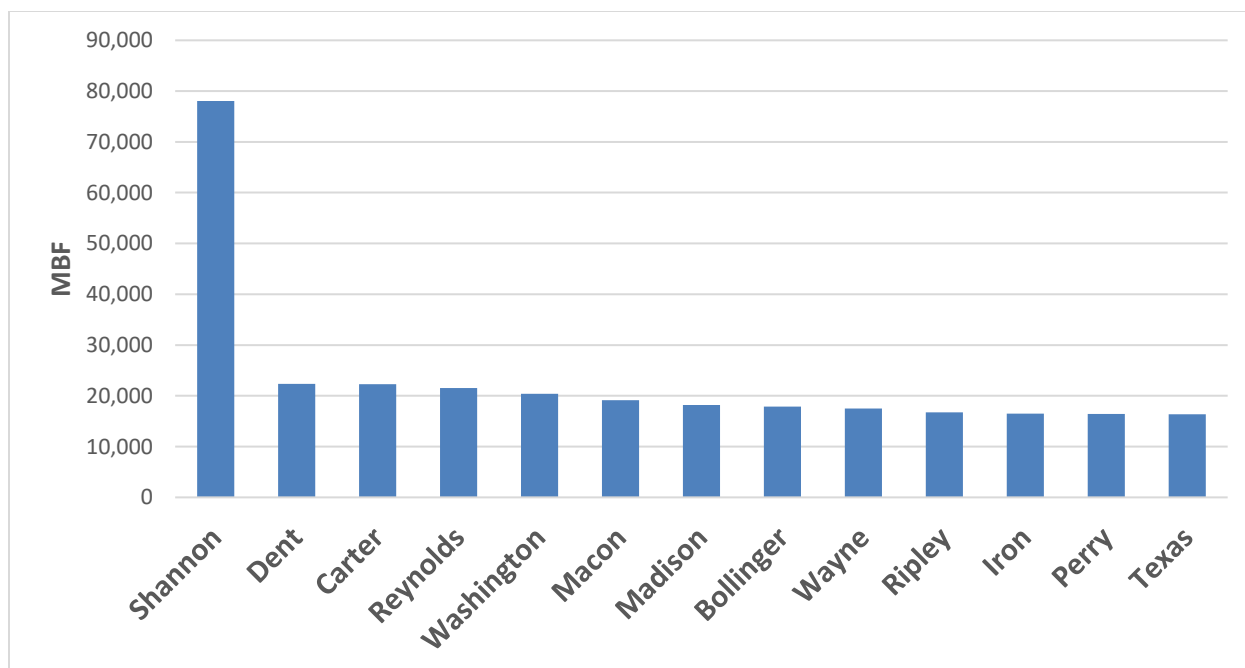


Figure 6 - Top counties by harvest, 2022.



- Red oaks were the most harvested species in 2022, accounting for 44% of the total industrial roundwood volume. White oaks at about 27% and hickory at about 8% were other major species harvested. (Table 2)

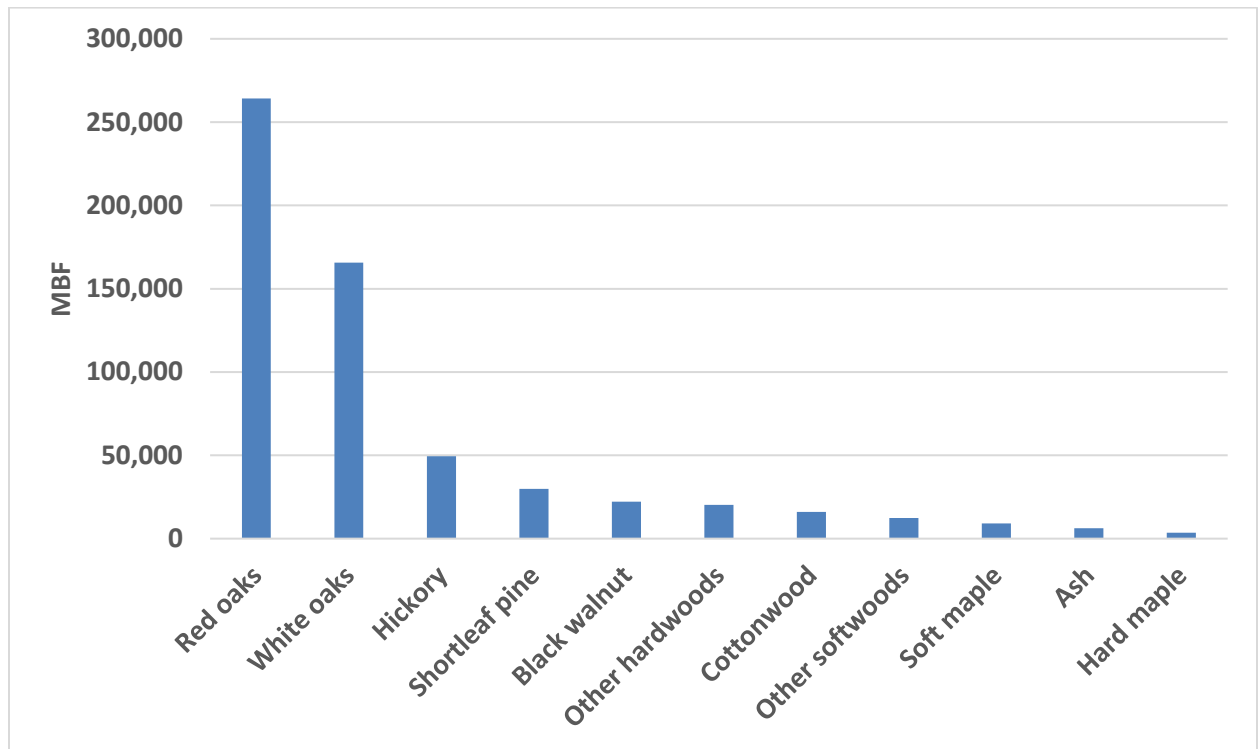


Figure 7 - Top species, 2022.

- Comparing harvest results from the 2022 primary wood processor survey with 2022 growth results from Forest Inventory and Analysis plot work, shows that the Ozark, Northeast, and Southeast Regions cut the largest percentage of their growth, at about 45%, while the Kansas City Region cut the smallest percentage of growth, 15%. Nearly 61% of red oak growth was harvested statewide. (Table 5)

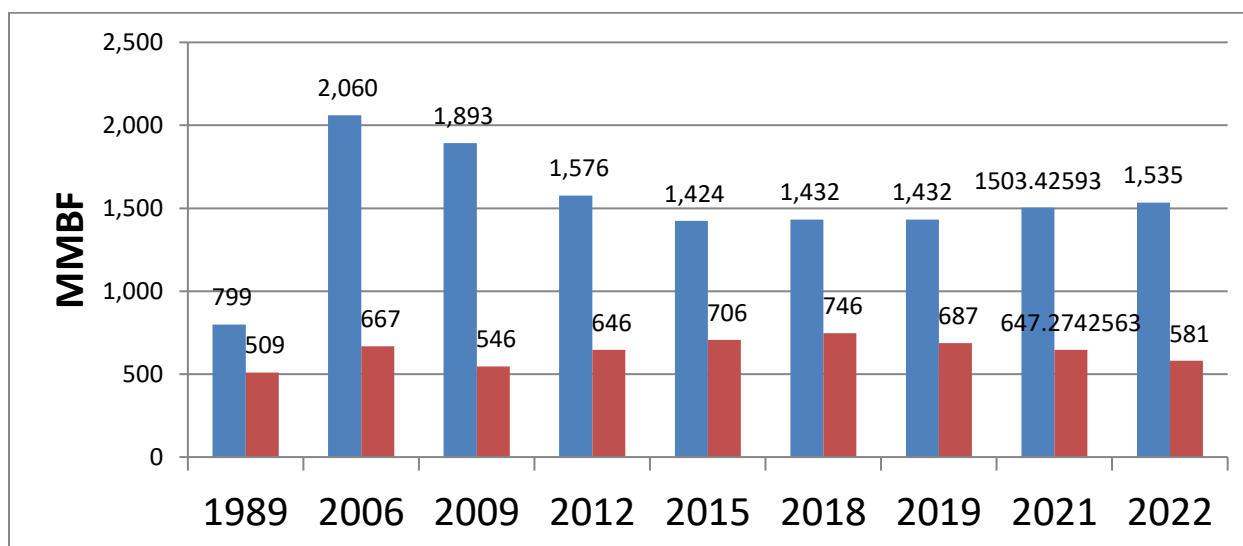


Figure 8 – Growth vs. harvest over time.

- Using USFS formulae, Missouri mills produced about 1.6 million green tons of residues in 2022. The bulk of this was coarse residues (suitable for chipping) from hardwoods (Table 6).
- Weighting responses by mill volume, less than 6% of mill residues went unused. Over 30% were used for charcoal and 35% or so were used for “miscellaneous and other” purposes (Table 7 – Use of residues, weighted by mill size, Missouri, 2022. Table 7).
- While 95% of sawmill residues are currently being utilized, very little harvest residue is utilized. According to 2009 data, 102.6 million cubic feet of wood was utilized in that year. An additional 71.6 million cubic feet of

wood was generated from logging slash, logging residues, cull trees, etc. The vast majority of this woody material is not currently being utilized.

- Using 2022 price data from Missouri Timber Price Trends (TPT), an estimated \$141 million could potentially have been paid to landowners for the timber harvested. This includes about \$60 million for red oaks, \$40 million for white oaks and nearly \$17 million for walnut. TPT price figures are, however, based only on reports from MDC, consulting, or other professional foresters. As such they represent prices at well-managed, marked and monitored timber sales. For those landowners who do not use a professional forester, the presumption is that prices are significantly lower, so the actual total paid to landowners in 2022 is surely less than \$141 million.
- In 2021, the most recent available data, forest products, wood, lumber, paper, and related industries contributed \$10 billion to the Missouri economy, in 2021 dollars. These industries support about 37,000 jobs at a payroll of over \$2 billion and are responsible for nearly \$700 million in taxes that help to run our state and country, including \$100 million in state sales tax. These numbers include logging and sawmill operations, secondary wood products, furniture and cabinet makers, log cabins, paperboard manufacturing and so on. The grand total includes not only the direct effect of jobs in the industry but secondary effects in the economy as a whole. Secondary effects are the changes in economic activity from subsequent rounds of re-spending of primary dollars. There are two types of secondary effects: 1) Indirect effects are the changes in sales, income, or employment within the region in backward-linked industries supplying goods and services to forest products industry. 2) Induced effects are the increased sales within the region from household spending of the income earned in the

forest products and supporting industries. Forest products employees spend the income they earn from tourism on housing, utilities, groceries, and other consumer goods and services. This generates sales, income, and employment throughout the region's economy.

**Table 1 – Number of active primary wood-using mills by MDC Region, Missouri, 2022.**

Type	Size	Total	Central	Kansas City	Northeast	Northwest	Ozark	Southeast	Southwest	St. Louis	2018
Sawmill	Large	26	1		2		7	8	3	5	36
	Medium	107	12	4	8	13	28	27	10	5	123
	Small	142	6	9	24	10	41	15	22	15	183
<b>Subtotal</b>		<b>275</b>	<b>19</b>	<b>13</b>	<b>34</b>	<b>23</b>	<b>76</b>	<b>50</b>	<b>35</b>	<b>25</b>	<b>342</b>
Charcoal	Large	2					2				
	Medium	2					2				
	Small	1					1				
<b>Subtotal</b>		<b>5</b>					<b>5</b>				<b>3</b>
Cooperage	Small	2	1				1				
<b>Subtotal</b>		<b>2</b>	<b>1</b>				<b>1</b>				<b>2</b>
Log broker	Large	2			1			1			
	Medium	3				1		2			
<b>Subtotal</b>		<b>5</b>			<b>1</b>	<b>1</b>		<b>3</b>			<b>9</b>
Posts	Medium	1					1				
	Small	1					1				
<b>Subtotal</b>		<b>2</b>					<b>2</b>				<b>5</b>
Other	Large	2					1	1			
	Medium	3	1		1		1				
	Small	9	4		2			1	1	1	
<b>Subtotal</b>		<b>14</b>	<b>5</b>		<b>3</b>		<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>13</b>
<b>Total</b>		<b>303</b>	<b>25</b>	<b>13</b>	<b>38</b>	<b>24</b>	<b>86</b>	<b>55</b>	<b>36</b>	<b>26</b>	<b>374</b>

**Table 2 – Harvest volume by species group and MDC Region, Int. MBF, Missouri, 2022.**

Species Group	Total MO)	Pct. of Total	MDC Region								Out of State
			Central	Kansas City	Northeast	Northwest	Ozark	Southeast	Southwest	St. Louis	
Shortleaf pine	<b>27,467.9</b>	4.7%	187.2				17,938.2	6,015.6	312.6	3,014.3	1,719.6
Other softwoods	<b>12,267.4</b>	2.1%	1,693.3	17.8	205.8	61.2	798.7	227.5	9,033.4	229.8	1,367.7
White oaks	<b>161,622.0</b>	27.8%	16,507.2	2,817.7	15,034.7	4,229.8	55,336.3	36,901.0	11,693.7	19,101.8	12,573.8
Red oaks	<b>256,445.0</b>	44.1%	18,528.4	3,672.7	12,085.0	5,210.1	110,206.6	70,106.3	17,439.1	19,196.6	17,313.3
Hickory	<b>48,250.6</b>	8.3%	3,671.5	607.1	3,156.5	1,059.2	21,348.2	13,974.4	1,966.1	2,467.6	3,586.9
Hard maple	<b>3,495.1</b>	0.6%	96.1	104.9	144.1	3.3	21.4	2,259.4	728.8	137.0	1,336.4
Soft maple	<b>9,037.7</b>	1.6%	1,563.3	233.0	3,716.9	2,585.7	101.3	374.5	287.3	175.7	488.3
Ash	<b>6,080.3</b>	1.0%	553.0	308.8	690.7	614.7	482.9	2,196.5	1,033.7	199.9	2,288.0
Cottonwood	<b>15,622.8</b>	2.7%	2,403.7	535.7	5,805.1	4,417.1	356.8	227.8	1,096.6	780.0	1,780.0
Black walnut	<b>21,203.6</b>	3.6%	2,498.0	3,468.7	1,999.4	2,287.5	634.1	1,862.1	7,788.7	665.1	6,852.8
Other hardwoods	<b>19,650.6</b>	3.4%	2,583.0	643.1	3,051.1	2,394.8	1,121.1	6,525.7	2,297.6	1,034.2	4,995.7
<b>Total</b>	<b>581,142.9</b>		<b>50,284.8</b>	<b>12,409.6</b>	<b>45,889.4</b>	<b>22,863.2</b>	<b>208,345.6</b>	<b>140,670.8</b>	<b>53,677.5</b>	<b>47,002.1</b>	<b>54,302.6</b>
Pct. of Total			8.7%	2.1%	7.9%	3.9%	35.9%	24.2%	9.2%	8.1%	

**Table 3 – Harvest volume by county, Int. MBF, Missouri, 2022.**

County	Region	Volume
Adair	Northeast	3,218.7
Andrew	Northwest	8.9
Atchison	Northwest	36.6
Audrain	Central	2,707.7
Barry	Southwest	5,904.1
Barton	Southwest	1,814.0
Bates	Kansas City	1,648.5
Benton	Kansas City	1,740.9
Bollinger	Southeast	17,851.6
Boone	Central	4,809.1
Buchanan	Northwest	1,202.4
Butler	Southeast	5,882.8
Caldwell	Northwest	457.5
Callaway	Central	1,047.6
Camden	Central	5,788.6
Cape Girardeau	Southeast	10,329.3
Carroll	Northwest	1,703.8
Carter	Ozark	22,302.2
Cass	Kansas City	435.5
Cedar	Southwest	1,545.4
Chariton	Northwest	7,223.4
Christian	Southwest	5,949.5
Clark	Northeast	1,246.5
Clay	Kansas City	149.1
Clinton	Northwest	81.4
Cole	Central	5,088.4
Cooper	Central	1,734.3
Crawford	St. Louis	12,316.9
Dade	Southwest	1,563.1
Dallas	Southwest	2,021.3
Daviess	Northwest	929.5
De Kalb	Northwest	81.1
Dent	Ozark	22,378.9
Douglas	Ozark	9,086.8
Dunklin	Southeast	216.0
Franklin	St. Louis	6,355.5
Gasconade	Central	4,951.0
Gentry	Northwest	813.2

County	Region	Volume
Greene	Southwest	2,451.1
Grundy	Northwest	2,746.9
Harrison	Northwest	1,479.7
Henry	Kansas City	2,042.0
Hickory	Southwest	1,545.1
Holt	Northwest	37.5
Howard	Central	3,058.8
Howell	Ozark	5,339.6
Iron	Southeast	16,514.5
Jackson	Kansas City	43.8
Jasper	Southwest	1,838.2
Jefferson	St. Louis	3,565.7
Johnson	Kansas City	435.5
Knox	Northeast	518.3
Laclede	Southwest	4,527.7
Lafayette	Kansas City	758.3
Lawrence	Southwest	2,928.8
Lewis	Northeast	758.6
Lincoln	St. Louis	2,208.4
Linn	Northwest	1,133.5
Livingston	Northwest	2,975.8
McDonald	Southwest	1,900.2
Macon	Northeast	19,149.6
Madison	Southeast	18,163.8
Maries	Central	4,715.3
Marion	Northeast	507.6
Mercer	Northwest	1,370.1
Miller	Central	3,936.8
Mississippi	Southeast	127.6
Moniteau	Central	1,331.4
Monroe	Northeast	2,583.5
Montgomery	Central	623.4
Morgan	Central	5,964.8
New Madrid	Southeast	2,290.5
Newton	Southwest	2,968.7
Nodaway	Northwest	339.8
Oregon	Ozark	15,214.6
Osage	Central	3,142.8

County	Region	Volume
Ozark	Ozark	6,409.6
Pemiscot	Southeast	41.1
Perry	Southeast	16,451.9
Pettis	Kansas City	501.6
Phelps	Ozark	6,641.0
Pike	Northeast	6,569.9
Platte	Kansas City	15.7
Polk	Southwest	1,668.9
Pulaski	Ozark	6,116.2
Putnam	Northeast	175.2
Ralls	Northeast	3,572.7
Randolph	Northeast	4,463.2
Ray	Northwest	372.4
Reynolds	Southeast	21,531.0
Ripley	Ozark	16,766.8
St Charles	St. Louis	397.8
St Clair	Kansas City	3,193.8
Ste. Genevieve	Southeast	3,037.8
St Francois	Southeast	4,404.5
St Louis	St. Louis	445.7
Ste Genevieve	Southeast	851.5
Saline	Central	1,658.8
Schuyler	Northeast	721.5
Scotland	Northeast	1,035.0
Scott	Southeast	3,528.9
Shannon	Ozark	78,069.5
Shelby	Northeast	709.4
Stoddard	Southeast	2,324.1
Stone	Southwest	2,319.3
Sullivan	Northeast	928.5
Taney	Southwest	9,459.7
Texas	Ozark	16,358.3
Vernon	Kansas City	1,478.8
Warren	St. Louis	1,106.3
Washington	St. Louis	20,419.5
Wayne	Southeast	17,524.5
Webster	Southwest	3,600.1
Worth	Northwest	116.9
Wright	Ozark	3,671.6
City of St. Louis	St. Louis	217.7
<b>Subtotal</b>		582,736.3

County	Region	Volume
<i>Not reported</i>		515.6
Out of State		53,810.4
<b>Grand Total</b>		637,062.3



**Table 4 –Volume of wood received from other states, Int. MBF, Missouri, 2022.**

State	Volume
Missing	515.57
Arkansas	14,399.64
Illinois	25,176.33
Indiana	414.00
Iowa	3,275.71
Kansas	4,027.08
Kentucky	3,945.38
Michigan	423.03
Nebraska	131.10
Oklahoma	1,393.80
Tennessee	624.34
<b>Total</b>	<b>54,325.98</b>

**Table 5 – Percentage of 2022 growth of sawtimber on forestland (from FIA plot data) harvested (from mill survey), by species group and by MDC Region Missouri, 2022.**

Species Group	Total
Shortleaf pine	24.3%
Other softwoods	32.3%
White oaks	38.9%
Red oaks	61.0%
Hickory	32.0%
Hard maple	15.9%
Soft maple	32.4%
Ash	30.6%
Cottonwood	48.0%
Black walnut	25.8%
Other hardwoods	12.0%
<b>Total</b>	<b>39.0%</b>

Region	Total
Northwest	30.4%
Kansas City	14.8%
Central	28.9%
Northeast	43.5%
St. Louis	34.9%
Southeast	43.9%
Southwest	27.1%
Ozark	47.6%
<b>Total</b>	<b>38.0%</b>

**Table 6 – Estimated residue, green tons, Missouri, 2022.**

Residue	Hardwood	Conifer	Total
Bark	203,171	25,855	229,026
Coarse	800,731	60,782	861,514
Fine	466,097	35,381	501,478
Total	1,469,999	122,018	1,592,017

**Table 7 – Use of residues, weighted by mill size, Missouri, 2022.**

Residue Use	Total
A: Used for manufacture of fiber products	10.0%
B: Used for manufacture of composite products	0.8%
C: Used for charcoal	31.6%
D: Used for fuel at this mill	4.1%
E: Used for fuel elsewhere	5.5%
F: Used for domestic fuel	3.5%
G: Used for miscellaneous uses	34.8%
H: Used for other	4.6%
I: Not used	5.1%

**Table 8 - Volume received by mill and roundwood types, Int. MBF, Missouri, 2022.**

Mill Type	Sawlogs and bolts	Veneer logs	Cabin logs	Charcoal wood	Cooperage logs	Excelsior/shaving bolts	Handle bolts	Other	Poles	Posts	Total
Band sawmill	178,642.1				20,456.0			207.6			<b>199,305.7</b>
Circular sawmill	354,401.4		180.0				621.0		415.0		<b>355,617.4</b>
Scragg sawmill	19,426.3							80.0	3,360.0		<b>22,866.3</b>
Portable Bandsaw	1,468.7									2.0	<b>1,470.7</b>
Export logs - domestic	4,416.0	4,043.0									<b>8,459.0</b>
Export logs - international		2,049.3									<b>2,049.3</b>
Log broker	91.1										<b>91.1</b>
Tight cooperage					884.9						<b>884.9</b>
Untreated post mill										9,835.0	<b>9,835.0</b>
Charcoal kiln				26,560.0							<b>26,560.0</b>
Excelsior/shavings mill	20,020.0					1,435.2					<b>21,455.2</b>
Other	904.0							2,352.0	12.0		<b>3,268.0</b>
<b>Total</b>	<b>579,369.5</b>	<b>6,092.3</b>	<b>180.0</b>	<b>26,560.0</b>	<b>21,340.9</b>	<b>1,435.2</b>		<b>2,639.6</b>	<b>3,787.0</b>	<b>9,837.0</b>	<b>651,862.6</b>

**Table 9 - Volume received by species group and roundwood types, Int. MBF, Missouri, 2022.**

Mill Type	Sawlogs and bolts	Veneer logs	Cabin logs	Charcoal wood	Cooperage logs	Excelsior/shaving bolts	Handle bolts	Other	Poles	Posts	Total
Shortleaf pine	22,978.7			3,520.0				27.0	3,220.8	1,835.1	<b>31,581.6</b>
Other softwoods	4,329.3					1,435.2			12.0	8,001.9	<b>13,778.4</b>
White oaks	148,825.0	2,767.0	72.0	4,656.0	21,146.3			158.1	460.5		<b>178,084.9</b>
Red oaks	264,740.9	1.7	54.0	13,936.0				122.1	2,120.5		<b>280,975.2</b>
Hickory	47,887.2	210.7	18.0	3,968.0			621.0	79.4	208.0		<b>52,992.3</b>
Hard maple	4,847.4								2.3		<b>4,849.6</b>
Soft maple	9,536.8			96.0							<b>9,632.8</b>
Ash	8,361.5			96.0				24.0	0.8		<b>8,482.2</b>
Cottonwood	17,785.9								0.8		<b>17,786.7</b>
Black walnut	25,745.3	3,113.0			162.2			60.0	0.8		<b>29,081.3</b>
Other hardwoods	23,769.9		36.0	288.0	32.4			1,113.0	0.8		<b>25,240.1</b>
<b>Total</b>	<b>578,807.9</b>	<b>6,092.3</b>		<b>26,560.0</b>	<b>21,340.9</b>	<b>1,435.2</b>		<b>1,583.6</b>	<b>6,027.0</b>	<b>9,837.0</b>	<b>652,485.0</b>

